

Thracia dissimilis.

Ovate-oblong, compressed, white, roughened by numerous fine granules, which are generally arranged in lines radiating from the umbo; transversely excentrically plaited; anteriorly rounded; posteriorly vertically truncate, with a keel (most prominent on the smaller valve) running from the umbo to the lower posterior angle. Height 27 millims., length 40, thickness 15.

This is nearly allied to *T. plicata*, which Reeve (Conch. Icon. *Thracia*, 7) considered it to be. Our shell is rather intermediate between *T. plicata* and *T. magnifica*, differing from the former in ornamentation and general shape. On a tablet in the British Museum the name *dissimilis* is applied to our species; but I have not been able to find any authority for that name, which I adopt for the shell.

The animal is furnished with two long siphons, separate for the whole of their length and coarsely fringed. The epidermis along the posterior margin extends beyond the shell and covers the bases of the siphons.

EXPLANATION OF PLATE VII.

[All the figures are of the natural size.]

Fig. 1. *Mastra anserina*, right valve. Cumana, Venezuela.

Fig. 2. *Venus superba*, right valve. Cumana, Venezuela.

Fig. 3. *Cardium eburniferum*, right valve. South coast, Trinidad.

Fig. 4 a. *Arca centrota*, right valve, interior.

Fig. 4 b. The same, right valve of a large specimen, exterior.

Port-of-Spain, Trinidad, Sept. 1874.

VIII.—Notes on the Palæozoic Bivalved Entomostraca.

No. XI. Some Carboniferous Ostracoda from Russia.

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[Plate VI.]

In the seventh livraison of the first volume of his 'Lethæa Rossica' M. d'Eichwald figures and describes twenty species of Palæozoic Entomostraca, twelve of which are from the

* We refer to the French edition, published at Stuttgart in 1860.

Carboniferous rocks of Russia. Most of these species had been previously noticed by him, though not figured, in the 'Bulletin Soc. Imp. Nat. Moscou,' année 1857, p. 198.

M. d'Eichwald's specimens are from the Carboniferous Limestone of Borowitschi, in the Government of Novogorod; from Carboniferous Limestone on the right bank of the Serena, near Goroditz, in the district of Kozel, in the Government of Kalonga; from Carboniferous Limestone on the river Tscherepete, near Tschernischine, in the district of Likhwine, in the Government of Kalonga; from the Carboniferous Dolomite of Sterlitamak, in the Government of Orenburg; from the *Cytherina*-Limestone near the village of Filimonoff, on the river Oupa, in the Government of Toula; and from the Carboniferous Shale of Sloboda, also in the Government of Toula.

From these materials D'Eichwald describes and figures the following species:—

- Beyrichia gibberosa*, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 312; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1349, pl. 52. f. 11.
 — *colliculus*, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 313; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1348, pl. 52. f. 1.
 — *umbonata*, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 312; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1347, pl. 52. f. 10. This is a *Kirkbya*.
 — *striolata*, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 312; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1348, pl. 52. f. 14. This is a *Kirkbya*.
Leperditia microphthalma, D'Eichwald, Cypridina, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 310; *Leperditia*, Leth. Ross. i. vii. 1860, p. 1336. Possibly a variety of *L. Okeni*.
Bairdia Qualeni, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 311; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1339, pl. 52. f. 4.
 — *lævigata*, D'Eichwald, Cypridina, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 310; Leth. Ross. i. v. 1859, p. 309; *Bairdia*, Leth. Ross. i. vii. 1860, p. 1342, pl. 52. f. 5; and var. *nigrescens*. Both are *Leperditia*, and probably varieties of *L. Okeni*.
 — *æqualis*, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 311; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1340, pl. 52. f. 6.
 — *excisa*, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 311; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1342, pl. 52. f. 8. Possibly *Cythere* (?) *bilobata* (Munster).
 — *distracta*, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 311; Leth. Ross. i. vii. 1860, p. 1341, pl. 52. f. 12. Very similar to *Bairdia mucronata*, Reuss.
 — *curta*, M'Coy, D'Eichwald, Bull. S. I. N. Mosc. 1857, xxx. ii. p. 311; Leth. Ross. i. v. 1859, p. 309, vii. 1860, p. 1338, pl. 52. f. 17, and var. f. 18. *B. ampla*, *plebeia*, and varieties.

Judging from M. d'Eichwald's published figures, some of the above species may be more appropriately placed in other

genera. *Beyrichia umbonata* and *B. striolata* seem to belong to *Kirkbya*; and *Bairdia levigata* is a *Leperditia*.

Soon after the publication of the above-named work we were kindly favoured by M. d'Eichwald with a series of Russian specimens; and these have enabled us to arrive at a better understanding on some points of his Carboniferous species. We have also some other specimens, brought from Russia by the late Sir Roderick I. Murchison. Out of the eight species and their varieties (four) which we have identified among our Russian specimens, four have already been described as Carboniferous, two as Permian forms, one as Silurian, and four are new. Three or four named by M. d'Eichwald we relegate to other authors. There remain six or seven of M. d'Eichwald's Carboniferous species which we have seen in figures only.

We figure the best of our Russian specimens in Plate VI.; and the following observations will assist in defining the species.

1 & 1*. *Leperditia Okeni* (Von Münster †), and var. *inornata* (M'Coy). Pl. VI. figs. 1 & 2.

Bairdia levigata, var. *nigrescens*, D'Eichwald, Leth. Ross. i. vii. p. 1342, pl. 52. fig. 5.

This species, so common in the Carboniferous formations of Britain, Europe, and Nova Scotia, occurs in great numbers in a piece of hard, dark-grey, saccharoid limestone, labelled "*Bairdia levigata*, var. *nigrescens*, village of Phillineonowa, in the Government of Toula." The specimens, rather small, are all single valves, and of a blackish colour. The general contour of the carapace is nearly that of the typical *L. Okeni*. The eye-spot is not distinguishable. *Primitia Eichwaldi*, Corals, and Brachiopods are associated.

From near Likhwine, in the same Government, we have a minute specimen of this species, with a well-marked eye-spot and a slight marginal rim (fig. 2). In the former feature it agrees with M. d'Eichwald's figure of his "*Bairdia levigata*." From the same locality, in a piece of soft yellow limestone, other rather larger specimens occur, which we also refer to this species. They differ in having the carapace-valves less oblique than is usual with *L. Okeni*, thus having a nearly semicircular hinder end. These might without much difficulty be mistaken for a *Cythere*, and indeed do occur in a piece labelled "*Bairdia excisa*." This variety is not unusual

† Ann. & Mag. Nat. Hist. ser. 3, vol. xv. p. 406, pl. 20. figs. 1-3.

in the Carboniferous rocks of Scotland and Ireland; and may be regarded as *L. Okeni*, var. *INORNATA* (M'Coy).

M. d'Eichwald's figure of "*Bairdia levigata*" approximates to that of a *Leperditia*, and shows also the characteristic eye-spot. *L. microphthalma*, D'Eichw., also appears to be related to *L. Okeni* as a small variety.

1**. *Leperditia Okeni*, var. *obliqua*, nov. Pl. VI. fig. 3.

With the typical *L. Okeni* from Phillineonowa we find a few specimens of a small *Leperditia* having a relatively short hinge-line, a long sloping posterior region, and a full ventral curve. This is near *L. Okeni*, var. *acuta* (Ann. & Mag. N. H. ser. 3, vol. xv. p. 406, pl. 20. fig. 4); but it has a shorter hinge-line. In outline it approaches both *L. Hisingeri* and *L. Wilhensis* of Fr. Schmidt*, but agrees with neither. We propose to name this form var. *OBLIQUA*, as the greatest length is along a line much higher in front than behind.

2. *Beyrichia intermedia*, Jones & Holl. Pl. VI. fig. 11.

Length $\frac{1}{40}$ inch, height $\frac{1}{33}$ inch. A minute, subovate, smooth *Beyrichia*, with a nearly semicircular ventral border and a deep subcentral sulcus, rather posteriorly placed; this sulcus cuts the valve vertically, and extends from the dorsal border to less than halfway across the valve; another, but faint, indentation exists near the smaller (anterior) extremity.

In soft yellow limestone from near Likhwine, in the Government of Toula.

This is undistinguishable from *B. intermedia*, J. & H.†, from the Upper Silurian rocks of Malvern, except that its slightly greater length gives it a rather more oval outline.

3. *Primitia Eichwaldi*, sp. n. Pl. VI. fig. 12, a, b.

Associated with the *Leperditia* of Phillineonowa we have found some specimens of an Entomostracan corresponding with the description of *Primitia* given in the 'Annals,' ser. 3, 1865, vol. xvi. p. 415, except that it has a reticulate and slightly wrinkled ornament.

It is $\frac{1}{28}$ inch long, $\frac{1}{56}$ inch high; has elongate, oblong, flatly convex valves, with a straight dorsal border, a vertical sulcus in the posterior half, narrow above and broad below,

* "Ueber die russischen silurischen Leperditien," Mém. Acad. Imp. Sc. St.-Petersb. ser. 7, vol. xxi. 1873.

† Ann. & Mag. N. H. ser. 4, 1869, vol. iii. p. 218, pl. 15. f. 7.

and a slight rim bounding the free margin: the surface, in unworn examples, is reticulately ornamented, and is usually marked with numerous rather fine longitudinal wrinkles, due to the thickening of the longitudinal walls of the network.

The Upper-Silurian *P. variolata*, J. & H. *op. cit.* p. 418, pl. 13. f. 6, is a near ally; but is shorter, has its sulcus more central, and shows only a pitted ornament.

Some small bivalve carapaces from the Carboniferous strata of West Scotland †, and others from Shropshire, are allied to the form under notice, having suboblong outline, longitudinal wrinkles (stronger), and some fine reticulation; but the sulcus is contracted to a central *pit*, such as is found in some *Primitia*. We have also a small smooth form from Lanarkshire.

4. *Bairdia æqualis*, D'Eichwald. Pl. VI. fig. 4.

We identify a specimen from the yellow limestone of Likhwine with this species. It is $\frac{1}{2\frac{1}{2}}$ inch long, $\frac{1}{4}$ inch high, smooth, swollen, of a subtrapezoidal outline, with the posterior extremity blunt, and with a strong dorsal and ventral overlap.

5. *Bairdia ampla*, Reuss. Pl. VI. fig. 5.

Two very fine examples of a *Bairdia* sent us by M. d'Eichwald as *B. curta*, from Sloboda, in the Government of Toula, appear to us to belong to *B. ampla*, Reuss, known in both the Carboniferous and Permian formations.

The perfect shape of *B. curta*, M'Coy, has been given by one of us in plate 61. fig. 1, 'Monthly Microsc. Journ.' vol. iv. 1870.

6*. *Bairdia plebeia*, Reuss, var. *rhombica*, Jones. Pl. VI. fig. 6.

Included with the specimens of the last species is a single example of what seems to be, if not a distinct species, a rhombic variety of *B. plebeia*, described and figured in the 'Trans. Tyneside Nat. Field-Club,' vol. iv. 1859, p. 42, pl. 11. figs. 10, 11, 12. *B. plebeia* is common in both the Carboniferous and Permian formations; var. *rhombica* is Permian also.

† "*Kirkbya scotica*," J. & K. MS., 'Trans. Geol. Soc. Glasgow,' vol. iii. Supplem. Carb. Foss. p. 28. Unless specimens with concentric longitudinal ribs occur, this species will have to be allocated to *Primitia*.

6**. *Bairdia plebeia*, Reuss, var. *mundu*, nov.

Pl. VI. fig. 7.

We have one specimen of another variety of *B. plebeia* from the yellow limestone of Likhwine. It is rather more oblong than the usual form of the Permian *B. plebeia*, and its posterior angle is less developed. See Reuss, "Ueber Entom." &c., Jahresb. Wetterauer Ges. 1854, p. 67, f. 5.

7. *Cythere* (*Potamocypris*?) *bilobata* (Von Münster).

Pl. VI. figs. 8, 9, 10.

Bairdia excisa (?), D'Eichwald, Leth. Ross. i. vii. p. 1342, pl. 52. f. 8.

We have three specimens of this species from the yellow limestone near Likhwine. They were sent to us by D'Eichwald labelled as "*Bairdia excisa*." They nevertheless undoubtedly belong to Von Münster's "*Cythere* (?) *bilobata*"†, to which we now refer them.

D'Eichwald's *figures* show a much greater constriction on the subconcave border than we find in our specimens.

The recent *Potamocypris fulva*, G. S. Brady (Ann. & Mag. N. H. ser. 4, iii. pl. 18. figs. 1-4, and Nat. Hist. Transact. Northumb. and Durham, iii. p. 366), presents an external appearance remarkably similar to that of *Cythere* (?) *bilobata*.

8. *Cytherella Murchisoniana*, sp. n. Pl. VI. fig. 13, *a, b*,
fig. 14, *a-c*.

In a fragment of brown crystalline limestone, from a locality 30 wersts east of Bugulina, collected by the late Sir Roderick Murchison, we have numerous specimens of a small Entomostracan, which probably belongs to the genus *Cytherella*.

It is $\frac{1}{20}$ inch long, and half as high. The carapace-valves (always separate) are oblong in outline, with the dorsal and ventral borders nearly parallel; the ends are rounded; the posterior extremity is most obtuse; and from the region adjoining it the carapace contracts so as to give rather a wedge-shaped dorsal aspect. In casts a slight constriction crosses the valves near the posterior third (fig. 14, *b*). The shell is thick, and the surface apparently smooth.

† Ann. & Mag. N. H. ser. 3, vol. xv. p. 409, pl. 20. f. 10. This species, not uncommon in some Carboniferous rocks of Britain and Europe, was described by us (*loc. cit.*) as a *Cythere*: it is most probably either a *Potamocypris* or a *Bairdia*.

List of the Carboniferous Ostracoda of Russia.

- Beyrichia gibberosa*, *D'Eichw.* Sloboda.
 — *colliculus*, *D'Eichw.* Tschernischine.
 — *intermedia*, *Jones & Holl.* Tschernischine.
Kirkbya umbonata (*D'Eichw.*). Sloboda.
 — *striolata* (*D'Eichw.*). Sloboda.
Primitia Eichwaldi, *Jones & Kirkby.* Phillineonowa.
Leperditia Okeni (*Von Münster*). Phillineonowa, Sloboda.
 — —, var. *inornata* (*M'Coy*). Tschernischine.
 — —, var. *obliqua*, *J. & K.* Phillineonowa.
 — —, var. *microphthalma*, *D'Eichw.* Goroditz and Sloboda.
Cythere (?) *bilobata* (*Von Münster*). Tschernischine and Sloboda.
Bairdia excisa (?), *D'Eichw.* Tschernischine and Sloboda.
 — *ampla*, *Reuss.* Sloboda*.
 — *plebeia*, *Reuss*, var. *rhombica*, *Jones.* Sloboda.
 — —, var. *munda*, *J. & K.* Tschernischine.
 — *æqualis*, *D'Eichw.* Sloboda.
 — *distracta*, *D'Eichw.* (= ? *mucronata*, *Reuss*). Borowitschi and Goroditz.
 — *Qualeni*, *D'Eichw.* Sterlitamak.
Cytherella Murchisoniana, *J. & K.* Near Bugulina.

EXPLANATION OF PLATE VI.

[All the figures, except fig. 12 *b*, are magnified 20 diameters.]

- Fig. 1.* *Leperditia Okeni* (*Von Münster*): right valve of small individual.
Fig. 2. *Leperditia Okeni*, var. *inornata* (*M'Coy*): left valve.
Fig. 3. *Leperditia Okeni*, var. *obliqua*, nov.: left valve.
Fig. 4. *Bairdia æqualis*, *D'Eichw.*: *a*, right side; *b*, dorsal; *c*, ventral edge; *d*, end view.
Fig. 5. *Bairdia ampla*, *Reuss*: *a*, right side; *b*, ventral edge; *c*, end view.
Fig. 6. *Bairdia plebeia*, *Reuss*, var. *rhombica*, *Jones*: left valve.
Fig. 7. *Bairdia plebeia*, var. *munda*, nov.: left valve.
Figs. 8 a, b, c, 9 a, b, 10 a, b, c. *Cythere* (*Potamocypris*?) *bilobata* (*Von Münster*). Three individuals in various aspects.
Fig. 11. *Beyrichia intermedia*, *Jones & Holl*: left valve.
Fig. 12. *Primitia Eichwaldi*, sp. nov.: *a*, left valve, with wrinkled ornament; *b*, ornament, from a reticulated portion, magnified 84 diameters.
Fig. 13. *Cytherella Murchisoniana*, sp. nov.: *a*, left valve; *b*, edge view.
Fig. 14. *Cytherella Murchisoniana* (cast): *a*, right valve; *b*, edge view; *c*, end view.

* Under the heading "*Bairdia curta*" in 'Lethæa Rossica,' *loc. cit.*, M. d'Eichwald gives Tschernischine, Goroditz, Borowitschi, and Sloboda as localities for at least three varieties, and he quotes it also from the 'Old Red Sandstone with Fucoids.'